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Abstract

This study repcrts an attempt tc improve the administration cf the Peabody Picture Vocabulary Test (PPVT) by identifying and mcdifying aspects of the test which adversely affect disadvantaged preschoolers' performance. The resultant test was called the Modified Peabody Picture Vccabulary Test (M-PPVT). Two samples from the same lcwer class pcpulaticn were ccmpared cn the standard and modified test versions. The M-PPVT required the examiner to prcvide encouragement and approval, to follcw a schedule cf high reinforcement, and tc give specific instructicns befcre each stimulus word. A modified record sheet facilitated administration and reccrding of responses. In Study I both test fcrms were administered twice tc 36 Negro children. There was slightly increased score stability under the M-PPVT, but practice effects were not significant. Boys scored significantly higher than girls. In Study II, 19 black children took the PPVT and 19 took the M-PPVT. Results suggested that the M-PPVT offered a slight advantage tc lcw-scoring subjects pcssibly due to examiner ccntrols. Selection and evaluation of test instruments for disadvantaged preschoolers should ccnsider psychcmetric properties, and the influences cf examiner styles and test administration controls on perfcrmance. (DR)

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Modification of the Peabody Picture Vocabulary Test[1,2,3]

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One of the major difficulties encountered by researchers interested in clinical and educational testing has been the selection of appropriate tools to be used as screening measures for children who have limited expressive vocabularies or who are verbally inhibited in testing or classroom situations. The Peabody Picture Vocabulary Test (PPVT) has been widely used to identify level of receptive language functioning and to assist in placing children in various remedial programs. A complete description of the test and its reliability and validity data are given in the manual (Dunn, 1965). Data has been collected on a variety of populations including normal children, trainable mental retardates (Dunn and Hottell, 1961), cerebral palsied (Dunn and Harley, 1959), and schizophrenic children (Shaw, 1961). There is only one study, to our knowledge, whose subjects were preschool, black children living in urban poverty (Milgram and Ozer, 1967). These subjects consistently obtained lower scores on the PPVT than on the Stanford-Binet (S-B), and the individual scores were somewhat unstable over time; hence these authors concluded that the PPVT may be more susceptible to environmental impoverishment than the S-B.

The present authors observed that examiners vary in their style of administering the PPVT. Dunn (1965) states in his manual that administration of the test requires no special training. However, different examiners tend to obtain different scores from the same subjects, presumably

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due to their differences in reinforcement styles, reinforcement schedules, different patterns of expectancy, etc. Further support for these observations comes from a previous unpublished study of the authors where the performance of the middle and lower class Negro preschoolers was compared on PPVT test. The mean difference in Raw Score was 25.5 points in favor of the middle class sample and 32.3 in I.Q. points in the same direction. The mean I.Q. on the PPVT was 67.2 and on the S-B was 92.7 for the same lower class sample.

Recent research on examiner and situational variables has demonstrated that many incidental variables, not directly related to those under investigation may influence a subject's response. Rosenthal (1966) has comprehensively reviewed a number of research studies pertaining to such variables. When an examiner interacts with a subject, both his physical and psychological attributes may prove significant determinants of the subject's responsiveness. Masling (1966) also reviewed a number of studies demonstrating the impact of administrative procedures, testing situations and examiner differences. Additional evidence comes from a study with disadvantaged preschoolers reported by Zigler and Butterfield (1968) which demonstrates the impact of reinforcement styles and the expectancy of success or failure on test performance. Studies of modeling, identification and imitation (Bandura and Huston, 1961; Ware, Kowal, and Baker, 1963; and Bandura and Walters, 1964) also demonstrate the importance of such variables.

The findings of the above-mentioned studies and our own experience in testing disadvantaged preschool children led us to modify some, and radically alter other areas of the standard administration of the test, which we shall refer to as "Modified Peabody Picture Vocabulary Test"

(M-PPVT). The only other known modification of the PPVT was conducted by Melcer and Peck (1966) with cerebral palsied children. Their modified test consisted of 20 plates (four pictures each), which gave subjects the choice of two correct responses, one an "Object," the other an "Action."

The purpose of the present study was twofold. First, to explore the possibility of improving the administration of the PPVT by identifying and then modifying those aspects of the test which seem to have an adverse effect on the disadvantaged preschool children's performance. Second, to compare the performance of two samples from the same lower-class population on the Standard and Modified administration of the PPVT.

Methodology

A. Modification:

The major areas of modification are concerned with (1) expectancy, (test length and "ceiling"), (2) reinforcement (style and schedule), and (3) specificity of the stimulus. A modified record sheet facilitates administration and the recording of responses.

Expectancy: It has been the experience of the authors that disadvantaged preschool Negro children get discouraged once they are unsure about three or four consecutive items. The examiner often picks up the child's discouragement, assumes he will not perform well and, "expects" him to reach a ceiling quickly. Thus, high need for encouragement and approval on the part of the child together with low expectancy on the part of the examiner potentially depress PPVT scores. MacKinnon (1962) has succinctly stated, "If our expectancy is that a child of a given intelligence will not respond creatively to a task which confronts him, and if we make this expectation known to the child, the probability that he will respond

creatively is very much reduced." The items in the PPVT are arranged in order of increasing difficulty which, to a certain extent, contributes to the child's discouragement and the examiner's low expectancy. For this reason we took the first 70 picture plates from the test booklet and randomized them, administering all items to all subjects. These were preceded by nine sample items. (The 70 items include the highest ceiling item reached by any subject in our population, plus ten). This modification eliminates the examiner-determined ceiling.

Reinforcement: Our observations of test administrations highlighted the children's considerable sensitivity to social (verbal) and interpersonal (non-verbal) reinforcers. The examiner's effectiveness as a reinforcing agent has been investigated in a number of studies (Sacks, 1952; Zigler, 1963; McCoy and Zigler, 1965; Weiner, 1965; and Costello, 1967). Several of these studies indicate greater variation in performance among lower class than middle class children as a function of reinforcement conditions. Additional studies concerned with quantity of social reinforcement suggest that 50 percent reinforcement yielded a performance level approaching that obtained under 100 percent reinforcement (Jenkins, 1950; Lewis, 1960). Crandall (1963) proposed a situational hypothesis relative to change in reinforcement strategy which predicts that non-reactions (e.g. silence) acquire a reinforcement value opposite to the value of the preceding verbal reinforcer, i.e. silence after positive reinforcement is responded to as negative and silence after negative reinforcement becomes positively reinforcing.

These studies in conjunction with our observations of examiner variations in reinforcement styles determined our choice of a reinforcement strategy for the M-PPVT. We had found that enthusiastic, highly reinforcing

examiners had a positive (though not statistically significant) influence on test scores of preschool children. Thus we chose a reinforcement strategy which approached that of the naturally "high" reinforcers. Six reinforcing statements were randomly assigned to test stimuli and printed on the record sheet.** Test responses were reinforced according to the following schedule, 100 percent of the responses were reinforced for the first 20 items (regardless of their accuracy), 50 percent for the next 20 items, and 33.3 percent for the last 30 items. All nine examples were reinforced.

Specificity of the stimulus: Instructions preceding each stimulus word were randomly assigned and printed on the M-PPVT record to control for examiner variation, e.g. item 14 became "point to skirt;" item 31, "show me nest."

M-PPVT Record Sheet: The record sheet for the M-PPVT included for each item the original page number of the picture plate, the stimulus instruction, stimulus word, and verbal reinforcement. Form A stimulus words were used. Instructions for using the modified procedure appear on each record sheet. An additional page of instructions regarding the establishment of optimal subject set, and other aspects of test mechanics supplement those provided in the PPVT manual.

B. Comparison of PPVT and M-PPVT

Study I

In order to determine test-retest stability of each form, the PPVT and the M-PPVT were administered twice to "disadvantaged" Negro preschool

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** After Stevenson and Fahl (1961), these were the reinforcements chosen: "That's very good;" "Good;" "You're doing very well;" "That's fine;" "You know the pictures very well;" and "You're really good at this."

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children attending two nursery schools. Thirty-six children from Research preschool, (18 boys and 18 girls, with a mean age 4.6 years) received PPVT and sixty-seven from a Head Start Center and the Research Preschool (32 boys and 35 girls, with a mean age 4.7 years) were given M-PPVT. Both groups were representative of four-year-olds living in a public housing project, on Chicago's West side. Raw Score data was used to determine the test-retest reliability, median scores and practice effects. This reliability study is reported in greater detail in a separate paper (Costello and Ali, 1969). In the present paper we are reporting briefly the reliability, effects of practice, and sex differences which emerged.

Study II

Thirty-eight preschool black children served as subjects for a study comparing PPVT and M-PPVT scores, (20 boys, with a mean age of 4.3 years and 18 girls with a mean age of 4.2 years). Nineteen children were given the PPVT and 19 the M-PPVT. They were assigned to one or the other group on an alternating basis. Scores for four subjects on the PPVT were not used because of their unwillingness to finish the test, or their inability to follow the test instructions reducing the PPVT sample size to 15.

Results

In both studies (I and II) the analyses are based on raw score data, since small differences in raw scores yield large differences in M.A. and I.Q.'s.

Study I

Test-retest reliability for the M-PPVT was 0.86 as compared to 0.77 for the PPVT suggesting slightly increased score stability under the modified administration (see Costello and Ali, 1969 for further elaboration). Of

interest was the gain (practice effect) between the two test administrations, separated by two weeks. In both forms (PPVT and M-PPVT) there is a non-significant increase in mean raw score over the two weeks suggesting a slight but unimportant practice effect. (The approximately three points increase represents a change of approximately two months in M.A. for PPVT and three months in M.A. for M-PPVT).

Insert Table 1 about here

Sex differences emerged in both administrations of the PPVT and M-PPVT with boys scoring significantly higher than girls. Mean differences are from 2 to 7 points, corresponding in M.A. to 2 to 10 months.

Congruent with other findings relative to partial reinforcement, we found that rate of errors increased when reinforcement changed from 100 percent to 50 percent, stabilizing to the initial rate during the 33 percent reinforcement period. We have since realized that a disproportionate number of difficult items occur in the 50 percent reinforcement segment of the test, which may alternately account for the increased rate of errors.

Study II

Comparison of raw scores obtained on the PPVT and M-PPVT yielded a non-significant difference in favor of the M-PPVT.

Insert Table 2 about here

Considering the small sample size and that the difference between means is significant at $.05 < p < .10$, it is possible that a significant difference would be found in a larger sample. The range of M-PPVT scores is somewhat narrower than that of PPVT scores, which may be a true difference or an

Table 1

Comparison of Mean Raw Scores for Test-Retest Administrations of PPVT and M-PPVT[1]

Test	Sample	N	Time 1 $\bar{X}$	Time 2 $\bar{X}$	Student's t
PPVT	Research preschool	31	26.2	29.9	1.58*
M-PPVT	"	36	41.5	43.4	1.27*
M-PPVT	Head Start	31	37.2	40.8	1.93*

* n.s.

[1]The PPVT data was collected some months before the M-PPVT data. As a result the means for PPVT and M-PPVT are not comparable.

Table 2

Comparison of Mean Raw Scores for PPVT and M-PPVT

Test	N	$\bar{X}$	Range	Student's t
PPVT	15	29.6	15 - 51	
M-PPVT	19	34.5	24 - 46	1.78*

* $p < .10$

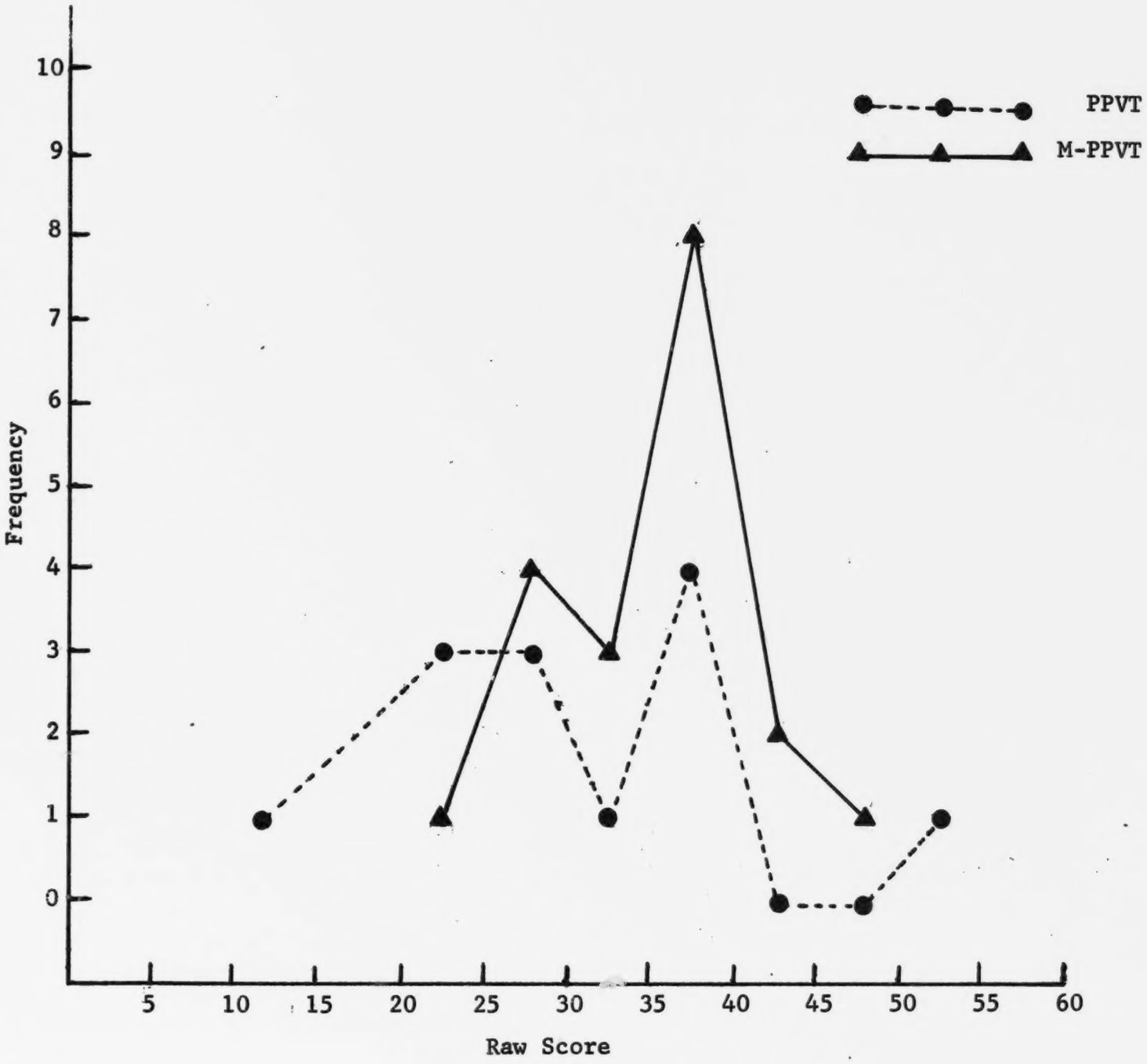

Figure 1 - Frequency distribution of Raw Scores for the Standard (PPVT) and Modified (M-PPVT) administration.

artifact of the M-PPVT's longer test length, which allows low scorers to gain extra points by guessing. Median score for PPVT was 35 and for M-PPVT was 36. The 25th percentile raw score however was 23 for PPVT and 30 for M-PPVT. This suggests that the M-PPVT offers an advantage to low-scoring subjects, as shown in figure I.

Discussion

The M-PPVT offers some control over examiner variations in test administration of the PPVT. It was well accepted by the examiners, who were relieved of the need to establish a ceiling score and a reinforcement schedule. Time of administration was not remarkably increased. Examiners reported that instructions accompanying each stimulus word were helpful, but that reinforcing statements were often too long suggesting one or two word reinforcers would be more appropriate.

The test-retest reliability study, (Study I) indicated slightly greater stability for M-PPVT scores and provided data which indicated that practice with the test does not significantly increase test scores for either PPVT or M-PPVT. These findings counterbalance much of the criticism leveled at the PPVT as an unstable measure which is easily influenced by test experience.

Data from the small comparison samples (Study II) suggest that the M-PPVT provides low-scoring children with some scoring advantage over the PPVT, although the differences were not statistically significant. We would like to suggest that examiner controls provided by the M-PPVT account for this advantage. It is possible, however, that the test length provides extra score points through guessing.

Our experience with the PPVT and a modification of its standard administration (M-PPVT) suggest that further research is needed to clarify

the influences of examiner styles and test-administration controls on the test-performance of young disadvantaged children. Limited observations of middle class Negro children have indicated less sensitivity to testing variations than we observed among lower-class (disadvantaged) groups. We conclude that in selection and evaluation of psychometric instruments especially for 'disadvantaged' preschoolers attention must be directed not only to their formal psychometric properties, but also to the characteristics of the testing situation in which they are applied. The modification described in this paper presents one approach to further standardizing some variables which surround test-administration.

[1]This study was carried out at the Dr. Martin Luther King Family Center [referred to in this paper as the Research Preschool], which is supported by the Kenneth F. Montgomery Charitable Foundation, in collaboration with the Illinois Department of Mental Health. Additional support was derived from a National Institutes of Mental Health General Support Grant, #1SO 1 - FR05 666-01.

[2]The authors wish to thank the children who participated in the study, their parents, the staff at the Research Preschool and the Head Start Center for their cooperation and collaboration. The authors wish to express special thanks to Mrs. Lolita Castillo and Miss Millicent Handrich for carrying out the testing.

[3]The authors wish to express special thanks to Mrs. Jacqueline Martin for conducting the tests and assisting in data analysis.

Bibliography

Bandura, A., & Huston, A. C. Identification as a process of incidental learning. Journal of Abnormal and Social Psychology, 1961, 63, 311-318.

Bandura, A., & Walters, R. H. Social Learning and Personality Development. Holt, Rinehart and Winston. New York, 1964.

Costello, J. Role of Examiner and Practice Effect on Test-Performance in Preschool Disadvantaged Children. Unpublished, 1967.

Costello, J. & Ali, F. Reliability and Validity of Peabody Picture Vocabulary Test Scores of Preschool Disadvantaged Children. IJR Research Report, 1969, 6, 14. Institute for Juvenile Research, Chicago.

Crandall, V. C. Reinforcement effects of adult reactions and nonreactions on children's achievement expectations. Child Development, 1963, 34, 335-354.

Dunn, L. M. Expanded Manual, Peabody Picture Vocabulary Test. Minneapolis: American Guidance Services, Inc., 1965.

Dunn, L. M., & Harley, R. K. Comparability of Peabody, Ammons, Van Alystyne, and Columbia test scores with cerebral palsied children. Exceptional Children, 1959, 26, 70-74.

Dunn, L. M., & Hottell, J. R. Peabody Picture Vocabulary Test performance of trainable mentally retarded children. American Journal of Mental Deficiency, 1961, 65, 448-452.

Jenkins, O. Partial reinforcement: a review and critique. Psychological Bulletin, 1950, 47, 193-231.

Lewis, D. J. Partial reinforcement: a selective review of literature since 1950. Psychological Bulletin, 1960, 57, 1-28.

MacKinnon, D. W. The nature and nurture of creative talent. American Psychologist, 1962, 17, 484-495.

McCoy, N., & Zigler, E. Social Reinforcer Effectiveness as a Function of the Relationship Between Child and Adult. Journal of Personality and Social Psychology, 1965, 1, 604-612.

Masling, J. Role-related behavior of the subject and psychologist and its effects upon psychological data. Nebraska Symposium on Motivation, 1966, 14, 67-104.

Melcer, D., & Peck, R. F. Sensorimotor experience and concept formation in early childhood. Unpublished. University of Texas, Austin, Texas. Final report Project No. 6-8493. Bureau of Research Office of Education, Department of Health, Education and Welfare, 1967.

Milgram, N. A., & Ozer, M. N. Peabody Picture Vocabulary Test scores of preschool children. Psychological Reports, 1967, 20, 779-784.

Rosenthal, R. Experimenter Effects in Behavioral Research. New York: Appleton Century Crofts, 1966.

Sacks, E. L. Intelligence scores as a function of experimentally established social relationships between child and examiner. Journal of Abnormal and Social Psychology, 1952, 67, 354-358.

Shaw, J. H. Comparability of PPVT and WAIS scores with schizophrenics without brain damage. Unpublished study, Nampa State School, Nampa, Iowa, 1961.

Stevenson, H. W. & Fahl, L. S. The effect of social reinforcement on the performance of institutionalized and non-institutionalized normal and feeble-minded children. Journal of Personality, 1961, 29, 124-135.

Ware, J. R., Kowal, B. & Baker, R. A., Jr. The role of experimenter attitude and contingent reinforcement in a vigilance task. Unpublished paper, U. S. Army Armor Human Research Unit, Fort Knox, Kentucky, 1963. Cited in Robert Rosenthal, Experimenter Effects in Behavioral Research. New York: Appleton-Century-Croft, 1966.

Weiner, M. Referent relationships in verbal communication. Tape of a talk given at Institute for Juvenile Research, Chicago, March, 1966.

Zigler, E. Social reinforcement, environmental conditions and the child. American Journal of Orthopsychiatry, 1963, 33, 614-623.

Zigler, E. & Butterfield, E. C. Motivational aspects of changes in IQ test performance of culturally deprived nursery school children. Child Development, 1968, 39, 1-14.

A P P E N D I X

INSTITUTE FOR JUVENILE RESEARCH

PRESCHOOL PROJECT

Modified Procedure for Administering MPPVT

Faizunisa Ali and Joan Costello

Establishing an optimal subject set:

1. The examiner should establish a rapport during the first 5 minutes of the test. Some of the things which are helpful are:

   (a) Introduction of the examiner to the subject followed by a handshake, or some physical contact.
   (b) Looking at an animal picture book together.
   (c) Encouragement, acceptance and rewarding of the child by saying "You are a good listener, before we start our work, let's have some candies, I'm sure you're going to like them."

2. The examiner should try to maintain a positive relationship with the subject throughout the test.

3. The examiner should 'look' and 'smile' at the child most of the time and not keep looking at the test record or the picture plates.

4. No subject can, or should, be expected to do better or worse on the basis of sociability, verbal skills, or cheerfulness.

5. A fixed schedule of reinforcement should be followed: 100% for the first 20 items, 50% for the next 20 items, and 33% for the last 30 items. These are indicated clearly on the test record.

6. No positive or negative notations should be used on the test record to indicate a response. Record only the number of the response.

Aspects of the test mechanics:

1. All subjects should be tested individually in a quiet, uncluttered room.

2. Instructions are given on the test record.

3. Stimulus words may be said loudly and clearly, more than once, if the subject doesn't hear them the first time.

4. When the subject makes more than one choice, record the final response.

5. If the subject continues to point to one location on plate after plate the examiner should point to picture No. 1 saying "look at this one," then to picture No. 2 saying, "and this one," then to

picture No. 3 saying, "and this one," and lastly to picture No. 4 saying, "and this one, too, O.K."

6. After every ten responses the subject should be reminded "Be sure to look carefully at all four pictures." (A star (*) on the test record indicates when to remind.)

7. The subject may take any reasonable amount of time per item to make his selection. However, an approximate time of 30 seconds is suggested. The subject may be encouraged by saying, "I know some are hard ones, look at all the four pictures and pick one." If no response is given this should be repeated again after 30 seconds.

To readers:

The Modified PPVT test record is included as an appendix to this report. It may not be duplicated at this time pending decision by The American Guidance Services Inc. publishers of the PPVT.

Summary

A modification of the PPVT was undertaken in an effort to standardize administration practices and to control for some factors observed to adversely influence test performance among preschool disadvantaged children.

Areas of modification were: expectancy of ceiling (all children received 70 randomized items), reinforcement (specific verbal reinforcements were given for each item), stimulus specificity (instructions preceding each stimulus word were specified). Results suggest the modifications positively influence test scores and contribute to improved test-retest stability.